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AUTHORITY

ago, d/a ltr, 29 apr 1980

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DEPARTMENT OF THE ARMY  
OFFICE OF THE ADJUTANT GENERAL  
WASHINGTON, D.C. 20310

IN REPLY REFER TO

AGDA (M) (12 Feb 70) FOR OT UT 694119

16 February 1970

SUBJECT: Operational Report - Lessons Learned, Headquarters, 577th Engineer Battalion, Period Ending 31 October 1969

SEE DISTRIBUTION

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2. Information contained in this report is provided to insure appropriate benefits in the future from lessons learned during current operations and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

*Kenneth G. Wickham*

KENNETH G. WICKHAM  
Major General, USA  
The Adjutant General

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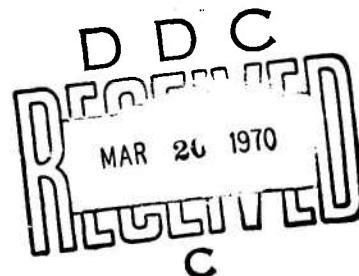
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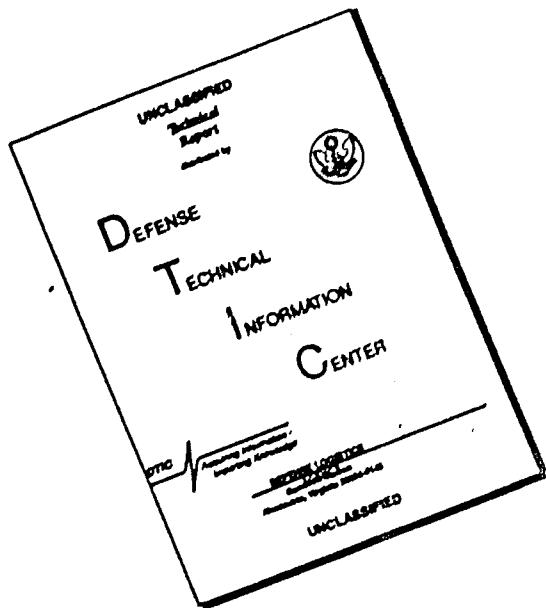
UNCLASSIFIED REPORT

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DEPARTMENT OF THE ARMY  
HEADQUARTERS, 577TH ENGINEER BATTALION (CONSTRUCTION)  
APO US Forces 96204

EGACBD-3

31 October 1969

SUBJECT: Operational Report - Lessons Learned of the 577th Engineer  
Battalion (Construction), Period Ending 31 October 1969, RCS CS  
FOR-65 (R2)

THRU: Commanding Officer  
35th Engineer Group (Const)  
APO US Forces 96312

Commanding General  
18th Engineer Brigade  
ATTN: AVAC-C  
APO US Forces 96377

Commanding General  
United States Army, Vietnam  
ATTN: AVHGC (DST)  
APO US Forces 96375

Commander in Chief  
United States Army, Pacific  
ATTN: GPOP-DT  
APO US Forces 96558

TO: Assistant Chief of Staff for Force Development  
Department of the Army (ACSFOR)  
Washington, D.C. 20310

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694119  
Inclosure

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1. Operations: Significant Activities:

a. Attached as inclosure 1 is a chart of the organization of the 577th Engineer Battalion (Const) with its attached units.

b. This unit engaged in ninety-two days of operations during the period covered. Mandatory and special training, including special emphasis on training during the Brigade Consolidation Month of September, were conducted after normal working hours or integrated into the daily work schedule. Training for overseas replacements as prescribed by USARV Regulation 350-1 was conducted as part of the in-processing at battalion, with the companies adding the weapons training and firing to their schedule. This was a change from the last reporting period.

c. Activities: As the reporting period began this unit was mainly involved with the maintenance and upgrade of QL-11, QL-21A, and QL-20. Other projects under construction were the II CTZ MACV Advisor Facilities at Gia Nghia and Revetment Construction for the Dalat-Camly Airfield. During the reporting period, the base camps at Don Duong and Duc Trong took final form and the following projects were closed out: B and C Companies Mission Essential Requirements Projects, B and C Companies Base Camp Construction, B Company Bunker Construction, and Sea Hut Construction at Don Duong. Other projects completed during this quarter were the Erosion Control Project on the access road to Lang Bain Mountain, Technical Assistance to Dalat LSA in the construction of mortar bunkers, Technical Assistance to IFFV Provincial Artillery, Dalat, in the construction of one living/fighting bunker and a 10,000 gal POL tank for the Camly POL Facility.

August 1969

During the first month of this reporting period A Company devoted its efforts to setting up and testrunning the 25G ton per hour Cedar Rapids Crusher and developing the quarry with two Chicago Pneumatic Track Drills. At the crusher area, a guard bunker was built atop the crusher headwall, which was also extended by a 32' wing wall. Within the cantonment, a 20' by 20' M8A1 helipad was constructed by D Company. They also completed two living/fighting bunkers and installed 96 LF of 36" CMP.

The major emphasis of the battalion was placed on the upgrade of QL-21A and QL-11. During this month B, C, and D Companies moved 40,857 CYS of fill material on QL-21A and 2.6 KM of subgrade were brought to grade. They also placed 657 LF of culverts and completed 30 rubble stone masonry headwalls on QL-21A. All sections of the road were graded and ditches cut in preparation for the approaching monsoon season. On QL-11, Delta Company placed 3,000 CYS of blast rock for stabilization in the area of French Fort and Culvert 44.1. This rock was obtained from a rock out crop in the vicinity of Bridge 44. Approximately 500 CYS of select fill and 500 CYS of 3"(-) rock were placed on the road east of Bridge 52 on QL-11. Just west of Bridge 52, a collapsed culvert was temporarily repaired by replacing the existing unsuitable material with 72 CYS of blast rock and 20 CYS of 1½"(-) and recutting ditches in the area.

INC/

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As part of D Company's ARVN affiliation program, 2,500 CYS of select fill and 2,000 CYS of 3"(-) rock were placed at various locations on the Battalion access road from Don Duong to the crusher area. 1,000 gallons of RC-3 were used to seal this road.

Prior to the start of the monsoon rains, Bridge 17/QL-21A progressed with the completion of the north abutment headwall, the fourth pier footer and the south abutment footer. Approximately 100 CYS of concrete were placed. Rebar for two piers was placed utilizing 4,600 LF and six 30 WF 176 steel beams were moved to the site at the end of August.

Other projects worked on by the battalion, included the placing of one bunker pad and framing the sides before material shortages slowed the MACV project for Advisor Facilities at Gia Nghia. The Lang Bain Mountain (Erosion Control) project was completed this month. There were 126 - 3" x 10" x 4' check dams placed on the road to control erosion. At Camly Airfield, an aircraft revetment project was started with the construction of a 325' long earth berm. Approximately 7,500 CYS of fill was moved for the berm. Seven 15' x 7' wooden floor sections were prefabricated at the site for revetments before materials ran out and the project came to a halt. A 30,000 gallon POL tank, at Dalat, which had been damaged during the previous quarter, was repaired by modifying it to a 10,000 gallon tank. The excess panels were removed and the damaged panels replaced. The project was completed thru the efforts of C and D Companies on 7 October 1969. Technical assistance was provided to Dalat LSA in the construction of 10 half culvert mortar bunkers. Seven of the 60" CMP half sections with sand bag retaining headwalls were completed this month. The project was completed in September.

The only significant enemy activity occurred on the morning of 23 August 1969. A B Company 1/4 ton vehicle, leading a work convoy, was ambushed on QL-21A. There were 2 WIA in the 1/4 ton, but they managed to drive on and personnel in following vehicles returned fire and broke contact. Rainfall began to pick up during the latter part of August with Duc Trong receiving 6.91 inches, Don Duong 3.22 inches and Dalat 4.51 inches. As August drew to a close, heavy rainfall washed the bypass at Bridge 17/QL-21A.

#### September

The first part of September saw the 250 ton per hour crusher coming into full operation. During the first week, a crusher availability factor of 8% was achieved and 21,861 CYS of rock crushed. However, on 7 September 1969 the headwall above the 250 TPH Crusher collapsed due to the heavy rains. In an emergency construction operation of two 12 hour shifts, the old headwall and chute were removed and a new one started. Timber posts cast in concrete footers, heavier cable anchored to a more extensive dead-man system, and inclined retaining wall with weep holes, and knee braces were included in the new design. By the time the repair was complete, the rains had deteriorated the industrial site haul road to a point that only 2,530 CYS of rock could be crushed for the remainder of the month using the 75 TPH Crusher.

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The battalion effort on the roads during this month shifted from upgrade to maintenance in an effort to keep the traffic moving within the AOR. Only 0.8 Km were brought to subgrade with 8,551 GYS of material moved on QL-21A. A total of 126 LF of culvert extensions and 11 rubble stone masonry headwalls were completed on QL-21A. One particularly serious sub-grade failure caused about 100 meters between Bridges 2 and 3/QL-21A to fail. The repair of this section was a major effort for about one week each by the earth moving platoons of D and B Companies. QL-11, down the pass toward Song Pha, was a continual challenge for D Company to keep open. The quarry blast area, near Bridge 44/QL-11, continued to produce large amounts of blast rock for stabilization of various soft spots along QL-11. Grading and shaping ditches was a continuous task throughout the entire AOR, as large amounts of slough were continually filling ditches. Most all the vertical platoons were converted to shovel crews to maintain the drainage and clear culverts. These crews were used also for installing sandbag curbs and headwalls to prevent further erosion and development of washout areas.

On 2 September 1969, a 290 M tractor and scraper from B Company slipped off the narrow and damaged old Bridge 17/QL-21A. It overturned and trapped the two occupants, killing both of them. It was discovered that the bridge was further weakened by the accident so that heavy traffic would have to be controlled. The decking was repaired and guide rails, constructed out of 3/4 inch rebar, were placed on both sides of the bridge with engineer tap markings. The bridge was reclassified as Class 20 Caution Crossing and appropriate signs were posted. Since heavier vehicles could not cross the bridge, an attempt was made to construct a culvert bypass for larger vehicles upstream from the bridge. But due to a swift current and rapidly rising water, the attempt had to be halted. Toward the end of the month Bridge 14/QL-21A was partially destroyed by enemy demolitions. A M4T6 dry span (22 feet) was installed over the existing bridge. On 11 September 1969, heavy rains washed out the bypass at Bridge 9 consisting of 3 - 60" CMP. A 70 foot, double single bailey bridge was constructed by B Company.

Construction of the new Bridge 17/QL-21A was continued during the first part of September. The forms for pier 1 and the rebar for piers 2 and 3 were in place when the heavy rains began to arrive in the middle of the month. All effort turned to securing and protecting the structures that were up. Due to the rapidly rising water, the forms and rebar were dismantled and returned to the company area. Some of the steel beams were brought to the company area for cleaning and repainting.

In compliance with Brigade Consolidation Month Program, emphasis was placed on training during off duty hours and increasing cantonment security. B Company completed their mess hall and upgraded their maintenance facilities in addition to increasing their perimeter defense. Company C added 18 perimeter lights, cut M-60 machine gun ports in their living/fighting bunkers, and completed the installation of 64 permanent claymores. They also constructed a swinging gate from pipe and chain link fence for the rear gate of their base camp. Cattle fence was installed within the cantonment to control traffic and serve as an auxiliary interior barrier. Company D constructed seven generator sheds for their base camp and improved

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their mess hall. The remaining work in the cantonment area at Don Duong consisted of improving base camp security. Company D continued work on the base camp access roads as part of the ARVN Affiliation Program. The west approach from Don Duong, called the Village Road, developed a large soft spot causing the road to be closed for 2 weeks in order to complete the necessary repairs. Work began on the east access road, called Banana Grove Road, with the installation of a 60" and 72" CMP to replace an unsafe steel span bridge. Upgrade of the road began with placing 1,060 CYS of fill to raise the roadbed which is below the surrounding terrain. The lack of adequate drainage and select fill during the monsoons required this project to be abandoned until after the monsoons.

During September, the MACV, Gia Nghia project progressed slowly due to material shortages. With 75 bags of cement transported to the site, the BOQ slab was completed and the supply building superstructure fabricated. Technical Assistance to IFFV Provincial Group Headquarters in Dalat was completed this month. A 20' x 50' concrete pad was placed and the living/fighting bunker was constructed.

The Duc Trong Cantonment received enemy mortar fire during the evening of 14 September and the morning of 15 September 1969 with negative casualties or property damage. The monthly rainfall totals were 17.91 inches in Duc Trong, and 23.27 inches in Don Duong.

#### October

Toward the middle of October the Monsoon season began to taper off. However, it was only at the end of the reporting period that the effects of the rain began to be alleviated. The 75 TPH crusher was used throughout the month to crush 8,075 CYS of rock. Rock production was limited somewhat, due to the almost impassable haul roads between quarry and crusher. Quarry production continued to be hampered by lack of drills (only two were operational.) Except for a short trial run, the 250 TPH crusher was not operating due to the loss of a 40 horsepower motor on the secondary shaker box and a relay for the 500 KW generator. Most of the rock produced was used to improve the quarry-crusher haul road. The asphalt plant was not used during the reporting period due to the lack of aggregate and the road conditions. The plant remained fully operational.

During October no additional roads were brought to finished subgrade, as the entire effort of the Battalion was concentrated on road maintenance and emergency road repairs in order to keep the LOC open. Most of the 3,010 CYS of fill moved on QL-21A was to repair subsurface failures in several locations in the area between bridge 2 and 4/QL-21A. Keeping the ditches and culverts open was a continuous task throughout most of the month. On QL-21A, 18 rubble stone masonry headwalls and 152 LF of culvert extensions were added to aid drainage. The last two weeks of the month "C" Company turned their effort to several bad areas on QL-20 south of Duc Trong. A total of 441 CYS of select fill was hauled to different locations. Approximately 300 feet of ditches were blown to clear standing water. One section deteriorated to the point that a corduroy road approximately 100 meters long was constructed. About 70 CYS

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of muck were removed and 260 CYS of rock fill were placed over the logs. At the close of the period, road maintenance on QL-20 is still in progress, but the road is open for two-way traffic. "D" Company continued road maintenance on QL-11 during October. Blast rock from the blast area near bridge 44/QL-11 was used for stabilization near Bridge 49/QL-11 and the French fort. Another rock borrow area was opened between bridge 44 and 45/QL-11. This area has produced 3000 CYS of rock to date.

Due to the weather, no work was performed on bridge 17/QL-21A during the month. On 17 October 1969, bridge 49/QL-11, a 100 foot double-single Bailey bridge failed. A 100 foot triple-single Bailey bridge was installed. A week later "D" Company installed its second Bailey bridge on the west access road to replace 3-72" CMP that were inadequate to drain the area.

During October, "C" Company used 144 CYS of fill for an additional protective berm and added 18 claymore mines to their perimeter. "D" Company continued repairs on the village road.

The MACV, Gia Nghia Project was complete except for the concrete slab in the supply building. At present supplies are being sent for this and completion of this project is imminent. All Combat Operational projects, outstanding during this month, were halted due to bad weather and shortage of materials.

During October, the rain tapered off with monthly totals for Duc Trong of 10.64 inches and 13.17 inches at Don Duong.

During this reporting period, a larger change-over of key personnel was experienced. Three of the four Company Commanders, most of the S-3 staff, the S-4, and battalion executive officer assumed their duties during this reporting period. As the quarter comes to a close, the weather is clearing for the upcoming construction season.

2. Section 2, Lessons Learned: Commander's Observations, Evaluations, and Recommendations:

a. Personnel: None

b. Operations:

(1) Assistance of Local Nationals

a. Observations: Local national personnel living along LOC's can be a tremendous help in keeping drainage open.

b. Evaluation: Company B discovered that a large portion of the difficulty arising in LOC Projects involving the stoppage of drainage results from trash thrown into drainage structures by local nationals. In an effort to correct this situation, this unit initiated a program of passing out leaflets in villages and hamlets requesting the assistance of the Vietnamese in keeping drainage structures open. These same leaflets also warn the Vietnamese that the engineer equipment and

vehicles are dangerous and that the people should not loiter near engineer work sites.

c. Recommendations: That all units with LOC projects initiate an information program to inform the Vietnamese in the area and request their assistance where possible.

(2) Construction of a temporary tow-bar

a. Observations: When a vehicle breaks down on the road and must be towed any distance, a chain or cable is ineffective as a towing device due to the slackening and tightening with the unavoidable variations in speed between the towed and towing vehicle.

b. Evaluation: An expedient tow bar can be constructed by placing the cable or chain inside a pipe. The slackening and tightening of the chain or cable is thereby eliminated.

c. Recommendations: While all vehicles cannot carry around a tow bar due to its bulkiness and comparative inavailability, a small pipe and length of cable or chain can be carried on all vehicles and provide an effective expedient tow bar.

(3) Drainage Culverts, See Inclosure 2

a. Observations: When installing culverts in areas with large volumes of run off and little change in elevation and drainage, water must be kept at as low a level as possible. The following culvert design was found to be effective.

b.. Evaluations: CMP half sections were assembled on sills placed on a plank base. The base and sills could be made of concrete if materials are available. Using this type of construction there will be a larger volume of drainage at the bottom than would be available if full CMP sections were used.

c. Recommendations: That this culvert design be considered where gradients are such that water levels must be kept low and culvert backfill depth is limited.

(4) Adjustable Culvert Struts, See Inclosure 3

a. Observations: To conserve lumber, permanent CMP adjustable culvert struts can be fabricated.

b. Evaluations: Using two pieces of pipe, concentrically fitted (one piece to slide with a minimum of tolerance inside the other,) the strut is created. A hole thru both pieces of pipe houses a pin to lock the pipe strut to a predetermined length. A 7" X 7" X  $\frac{1}{2}$ " piece of steel is welded to the top and a 5" X 5" X  $\frac{1}{2}$ " piece of steel is welded to the bottom to serve as bearing plates. The permanent pipe strut is

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installed the same as its wood counterpart by jacking the culvert vertically to elongate it.

c. Recommendations: This method is recommended to save considerable amounts of lumber. For 60' of 60" CMP, approximately 108 BF of 4"X4" lumber can be saved.

- c. Intelligence: None
- d. Logistics: None
- e. Organization: None
- f. Maintenance: None
- g. Other: None

CHARLES E. EDGAR III  
LTC, CE  
Commanding

- 3 Incl  
1. Organizational Chart  
577th EBC  
2. Culvert Headwall  
3. Rebar Bending Device

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EGM-CU (31 October 1969) 1st Ind  
SUBJECT: Operational Report - Lessons Learned of the 577th Engineer  
Battalion (Construction), Period Ending 31 October 1969,  
RCS CSFOR-65 (R2)

On, Headquarters, 35th Engineer Group (Const), APG 96312, 24 November 1969

TO: Commanding General, 18th Engineer Brigade, APG 96377

This headquarters has reviewed the Operational Report - Lessons Learned for the quarterly period ending 31 October 1969 from the 577th Engineer Battalion (Construction) and concurs with the comments and observations of the commander.

  
HARRY A. GRIFFITH  
COL, CE  
Commanding

AVBC-CG (31 October 1969) 2nd Ind  
SUBJECT: Operational Report of the 577th Engineer Battalion (Const)  
for the Period Ending 31 October 1969, RCS CSFOR-65 (R2)

DA, HEADQUARTERS, 18TH ENGINEER BRIGADE, APO 96377 18 DEC 1969

TO: Commanding General, U.S. Army Vietnam, ATTN: AVHGC-DST, APO 96375

1. This Headquarters has reviewed the Operational Report - Lessons Learned for the 577th Engineer Battalion (Const), as indorsed by the 35th Engineer Group (Const). The report is considered to be an excellent account of the Battalion's activities during the reporting period.

2. This Headquarters concur with the observations and recommendations of the Battalion and Group Commanders.

  
J. W. MORRIS  
Brigadier General, USA  
Commanding

CC:

1 - CO, 35th Engr Gp  
1 - CO, 577th Engr Bn

AVHGC-DST (31 Oct 69) 3d Ind

SUBJECT: Operational Report-Lessons Learned of the 577th Engineer  
Battalion (Construction), Period Ending 31 October 1969, RCS  
CSFOR-65 (R2)

HEADQUARTERS, UNITED STATES ARMY, VIETNAM, APO San Francisco 96375 17 JAN 1970

TO: Commander in Chief, United States Army, Pacific, ATTN: GPOP-DT,  
APO 96558

This headquarters has reviewed the Operational Report-Lessons Learned  
for the quarterly period ending 31 October 1969 from Headquarters, 577th  
Engineer Battalion (Construction) and concurs with the report as indorsed.

FOR THE COMMANDER:



C. E. MICHAEL

MAJ, AGC

Assistant Adjutant General

Cy furn:  
577th Engr Bn  
18th Engr Bde

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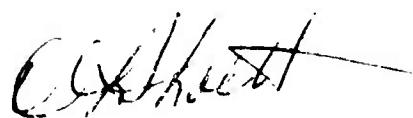
GPOP-DT (31 Oct 69) 4th Ind  
SUBJECT: Operational Report of HQ, 577th Engineer Battalion (Construction)  
for Period Ending 31 October 1969, RCS CSFOR-65 (R2)

HQ, US Army, Pacific, APO San Francisco 96558 27 JAN 70

TO: Assistant Chief of Staff for Force Development, Department of the  
Army, Washington, D. C. 20310

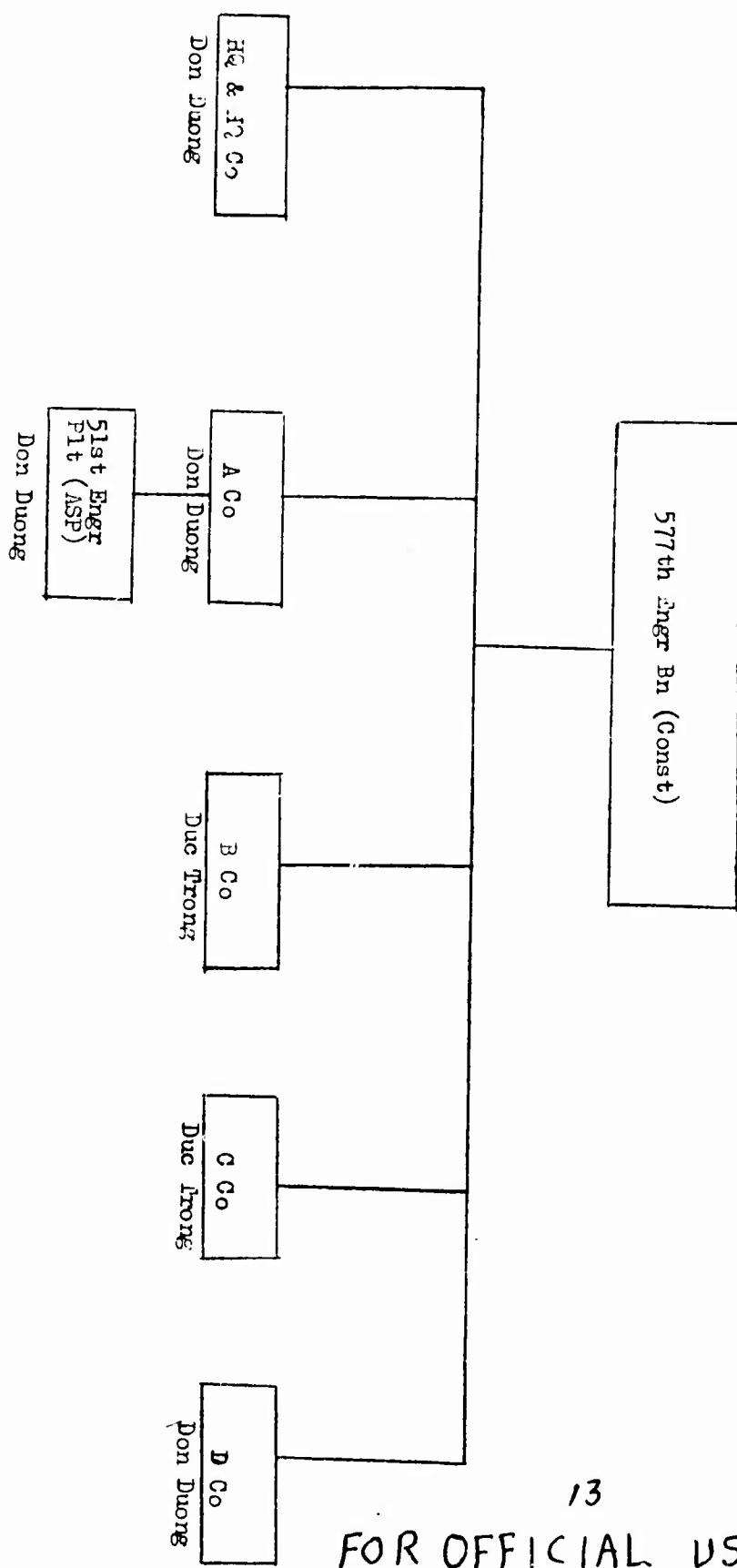
This headquarters concurs in subject report as indorsed.

FOR THE COMMANDER IN CHIEF:



C. L. SHORTT  
CPT, AGC  
Asst AG

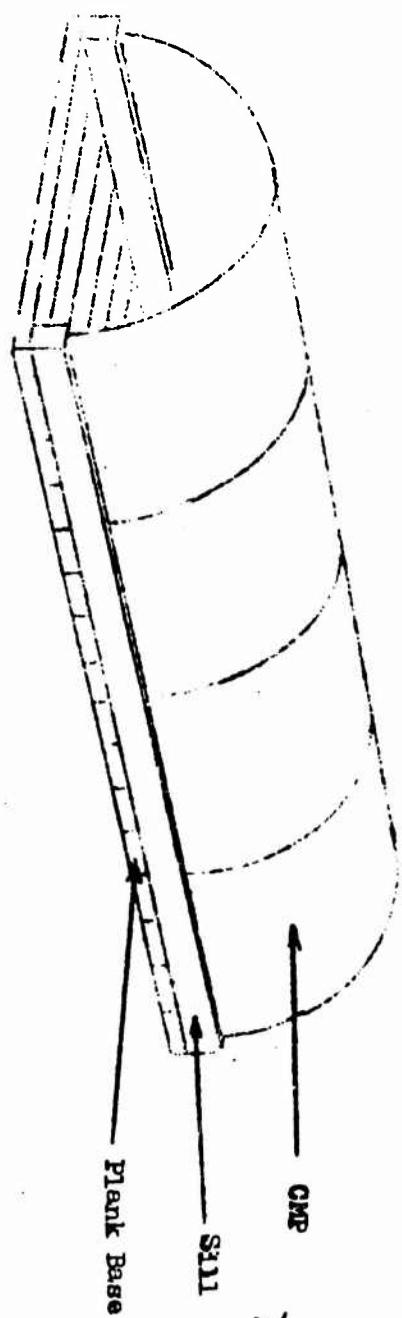
ORGANIZATION CHART  
577th Engineer Battalion (Const) and Attached Units



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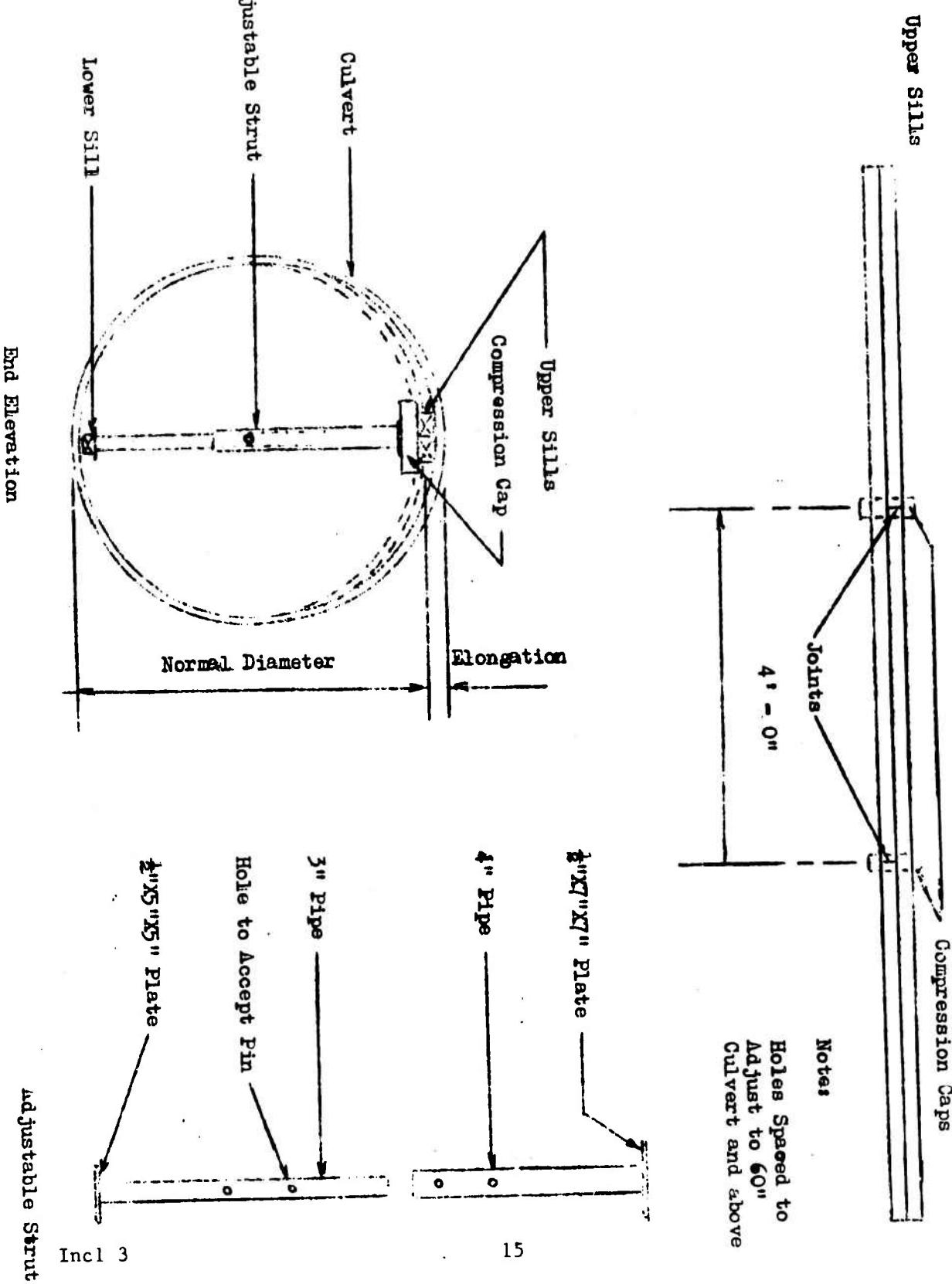
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